What's the Matter?

Resource for Grades Pre-K-1

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Media Type:  
**Video**

Running Time: **1m 39s**  
Size: **22.5 MB**

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**Related Resources:**

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**See Also:**

National K -12 Subject:

* [Chemical Change](http://www.teachersdomain.org/browse/?fq_hierarchy=k12.sci.phys.matter.chemch)
* [Properties of Matter](http://www.teachersdomain.org/browse/?fq_hierarchy=k12.sci.phys.matter.props)
* [Properties of Objects and Materials](http://www.teachersdomain.org/browse/?fq_hierarchy=k12.sci.phys.matter.objects)
* [Solids, Liquids, Gases](http://www.teachersdomain.org/browse/?fq_hierarchy=k12.sci.phys.matter.solid)

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Everything we see is made up of matter; it’s what gives things volume. Matter is comprised of three states: solids, liquids, and gases. Look at your desk at school. That’s a solid. The milk you drink for lunch? That’s a liquid. And helium—that invisible substance that fills birthday balloons—is a gas. This video helps young children begin to understand the three states of matter and their properties.

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One of the most basic scientific concepts is that everything is made of matter. Matter exists in three states: solid, liquid, and gas. (There is also a fourth state, plasma, that is similar to gas.) Each of these states of matter has properties or characteristics that help us identify it.

For example, although a pencil is lighter and takes up less space than a notebook, both have a definite shape. That is why they are both solids. One of the properties of a solid is its definite shape.

The milk you drink takes the shape of the cup or glass into which it is poured. If you spill it on the floor, it will spread out over a large area. You can see the milk, but it has no shape of its own. This is one of the properties of a liquid.

Unlike solids or liquids, gases can easily be compressed so that they fit into smaller spaces. They also can expand into larger spaces. Think about the smell of cookies baking in your kitchen. The air in your house—a gas—allows that delightful smell to spread far away from the oven.

Water is a unique substance, because we encounter it, almost daily, in all three states of matter. You drink a glass of water with dinner or after playing outside. When water is frozen, it turns into ice, a solid, and you can put it in a drink to make it colder. Perhaps your parents heat water to make coffee or tea. When water is heated long enough, it changes from a liquid to a gas. When water changes from a liquid to a gas, that process is called evaporation.

Evaporation is part of the earth’s water cycle, which is how our planet uses and reuses water. The sun provides energy through heat that causes water found in oceans, lakes, rivers, puddles—just about anywhere—to become warm and evaporate. When water evaporates, it changes from a liquid to a gas called water vapor.

Water vapor rises into cooler air and forms clouds. As the vapor cools and the clouds grow larger, water droplets in the clouds become too heavy to stay suspended in the atmosphere. The water vapor changes back into a liquid and falls back to earth in the form of rain or other precipitation. Once again that water becomes part of oceans, lakes, rivers, and puddles.

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**Introduction to the Properties of Water:**   
  
**Vocabulary**

solid, liquid, gas, vapor, evaporation, steam

**For this activity, you will need:**

 Water

 A bowl and cup for each child

 Ice trays

 Pan with lid

 Hot plate (or other means to heat water to boiling point)

 Chart paper and markers

 I Am Water by Jean Marzollo  
**Directions**  
**Part 1:**  
1. Read I Am Water to the children, providing ample time for them to examine the pictures.  
2. With the children, seated at a table, provide each child with a cup and a bowl.  
3. Pour a small portion of water into each child’s cup and encourage her to pour the water into the bowl, then back to the cup (as often as they like).  
4. Place the ice trays on the table and encourage the children to take turns filling the ice trays with the water.  
5. Place the ice trays in the freezer. Ask the children, “What do you think will happen now?”  
6. Leave the ice trays in the freezer until ice cubes form.  
  
**Part 2:**  
1. When the ice cubes are frozen and you’re ready to continue the lesson, ask the children what they think has happened to the water.  
2. With the children seated at the table, bring the ice tray with the ice cubes to the table. Give each child an ice cube and ask:  
a. How as the water changed from when we explored it with the cups and bowls?  
b. Why has it changed?  
c. How does water feel as ice?  
3. Introduce the terms “solid” and “liquid” as applied to water. Using the chart paper, write “States of Matter” as the title. Divide the paper into three columns.  
4. Title the first column “Liquid” and ask the children to help list the properties or characteristics of water as a liquid.  
5. Title the second column “Solid” and ask the children to help list the properties of water as a solid.  
6. Ask the children to name other solid objects and liquids.  
  
**Part 3:**  
1. On a subsequent day, review the children’s exploration of water and how it changes to a solid when you freeze it. Reinforce the terms “solid” and “liquid.”  
2. Explain to the children that they will be exploring another state of matter.  
3. In the kitchen area, place a small amount of water in a pan and bring it to a boil (with the children watching from a safe distance). As soon as the water comes to a rolling boil, cover the pan with a lid.  
4. Ask the children,  
a. How do you think the water has changed from when we explored it with the cups and bowls?  
b. How do you think the water has changed from when we explored it as ice?  
c. What do you think will happen when I take the lid off the pan?  
5. Remove the lid and give the children a chance to observe the steam. Quickly cover the pan again, allow more steam to build, and remove the lid so the children can observe what’s happening.  
6. Introduce the term “gas” and explain that when water is a gas, it’s called “vapor.” Then discuss the term “evaporate” (when a liquid escapes into the air as steam or vapor) as it applies to water.  
7. Review the chart “States of Water” with the children. Title the third column “Gas” and ask the children to list the properties of water as gas or vapor.  
8. Ask the children to compare and contrast the three states of water and what causes it to change from one state to another.  
9. Have the children watch “What’s the Matter?” to reinforce the lesson.